McBasic 10/100

Installation Guide

McBasic 10/100™ is a low-cost, preconfigured, IEEE 802.3 single-conversion *MediaConverter* that is designed to convert between 10Base-T twisted pair and 10Base-FL multi-mode or single-mode fiber or between 100Base-TX twisted pair and 100Base-SX multi-mode fiber or 100Base-FX single-mode fiber.

McBasic 10/100 is a 1U high, stand-alone unit that includes diagnostic LEDs for each port and a universal (100/240 VAC) power supply. *McBasic 10/100* includes one RJ-45 connector and one pair of ST or SC connectors or one VF fiber connector.

Installing McBasic 10/100

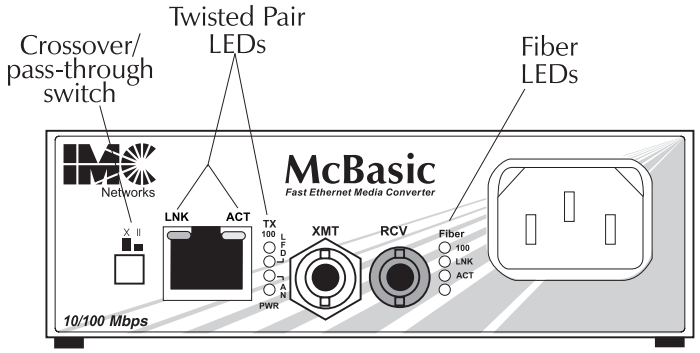
McBasic 10/100 comes ready to install. The only adjustments that may need to be made after installation are:

- Configuring the unit for its mode of operation.
- Setting the twisted pair port for a crossover workstation or pass-through repeater/ hub connection.

To install *McBasic 10/100*, first make sure that the unit is placed on a suitable flat surface, and leave some space at the back of the unit to accommodate the exhaust fan. Attach the cables between the McBasic 10/100 and each device that will be interconnected, then plug the unit into a reliable, filtered power source.

NOTE: All network cables must be connected for link LEDs to glow.

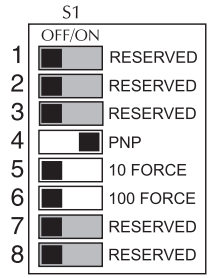
The following diagram shows the faceplate on *McBasic 10/100*. Regardless of the type of fiber connector(s), the LEDs remain the same. More on the specific functions of the LEDs can be found later in this guide.



Configuring McBasic 10/100

McBasic 10/100 features an 8-position Dip switch for configuring the unit. This switch is accessed through a cut-out in the bottom of the unit.

The following table provides simplified definitions of the function of each switch. More detailed information follows.



Switch	Function	Default
1	Reserved for Future Use — DO NOT CHANGE	OFF
2	Reserved for Future Use — DO NOT CHANGE	OFF
3	Reserved for Future Use — DO NOT CHANGE	OFF
4	PNP/Transparent Mode	ON
5	10 Mbps Forced Mode	OFF
6	100 Mbps Forced Mode	OFF
7	Reserved for Future Use — DO NOT CHANGE	OFF
8	Reserved for Future Use — DO NOT CHANGE	OFF

***Note:** Dip switches **1, 2, 3, 7** and **8** are reserved for future use and are configured at the factory; DO NOT change these switches.*

McBasic 10/100 Modes of Operation

The *McBasic 10/100 MediaConverter* features three possible "modes" of operation: **PNP/Transparent mode**, **Force 10 mode** and **Force 100 mode**. Your *McBasic 10/100* should be configured for one of these modes (factory default is PNP/Transparent mode).

- **PNP/Transparent mode**, also known as Auto-Negotiation or plug-and-play mode, is the mode most ideally suited for the *McBasic 10/100*. In this mode, the converter will optimally and automatically configure for speed (10 or 100 Mbps) and duplex (Half or Full) depending on the capabilities of the end stations.

  To enable PNP/Transparent mode, Dip switch **4** must be in the ON position (factory default). To disable PNP/Transparent mode, Dip switch **4** must be in the OFF position
- In **Force-10 mode**, the *McBasic 10/100* permits the transmission of valid 10 Mbps traffic only. In this mode, the module acts as a 10BASE-T/10BASE-FL media converter, rejecting 100 Mbps signals.

  To enable Force-10 mode, set Dip switch **5** to the ON position (Dip switch **4** must be in the OFF position). To disable Force-10 mode, move Dip switch **5** to OFF (factory default).

- In **Force-100 mode**, the *McBasic 10/100* configures specifically as a 100BASE-TX/100BASE-SX or FX media converter. Note that Force-100 implies the rejection of 10 Mbps signals.

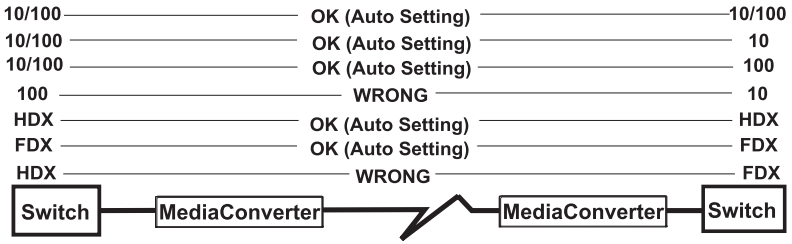
  To enable Force-100 mode, set Dip switch **6** to the ON position (Dip switch **4** must be in the OFF position). To disable Force-100 mode, move Dip switch **6** to OFF (factory default).

***Note**: Force mode should be used when any of the devices connected to the media converters DO NOT support Auto-Negotiation. Do NOT enable both Dip switches **5** and **6**. Only one switch should be enabled at any given time.*

IMPORTANT: It necessary to power down and then power up again before the above Dip switch changes will take effect!

Connecting Half Duplex or Full Duplex and 10 or 100 Mbps Devices

When connecting two *McBasic 10/100* media converters between two stations (devices such as switches, hubs and repeaters), unless both end stations are set to the same speed/duplex, one end station MUST be settable through PNP/Transparent (Auto-Negotiation) mode (i.e., can handle both 10/100 and/or HDX/FDX). If the end station's Duplex or speed cannot be set through Auto-Negotiation mode, then both end stations must be set for the same configurations manually. The following diagram shows a typical application with several configuration scenarios:



***Note:** McBasic 10/100 cannot be manually set for Half or Full Duplex.*

Twisted Pair Crossover/Pass-Through Switch

The twisted pair port on *McBasic 10/100* has one RJ-45 connector for a single shielded or unshielded twisted pair link segment, and features a push-button, located next to the twisted pair connector, for selecting a crossover workstation connection or pass-through repeater/hub connection. Select a pass-through connection by pressing the push-button IN. A crossover connection is selected when the push-button is OUT.

LED Operation

McBasic 10/100 features several diagnostic LEDs per port. The LED functions for *McBasic 10/100* are:

Twisted Pair Port

LNK Glows green when a twisted pair link is established

NOTE: Fiber optic cable must also be connected before the twisted pair port's Link LED will light.

ACT Blinks yellow when data is detected on the port

100 Glows green when 100 Mbps data is detected

LFD Glows green when Link Fault Detection is available

NOTE: This feature is only available when PNP/Transparent (Auto-Negotiation) mode is enabled. For more on this feature, refer to the Troubleshooting section later in this document.

AN Glows green when PNP/Transparent (*Auto-Negotiation*) mode is enabled

PWR Glows green when unit has power

Fiber Port

100 Glows yellow when 100 Mbps data is detected

LNK Glows green when a fiber link is established

NOTE: The twisted pair cable must also be connected before the fiber optic port's Link LED will light.

ACT Blinks green when data is detected on the port

NOTE: The fourth LED in this stack in reserved for future use.

Troubleshooting

Ideally, *McBasic 10/100* should be implemented into a media conversion installation where both sides are Auto-Negotiating. In this scenario where PNP/Transparent (Auto-Negotiation) mode is enabled on *McBasic 10/100*, the feature Link Fault Detection (LFD) is available. If a fault occurs, Link Fault Detection "carries" the link fault through the entire media conversion, dropping all Link LEDs.

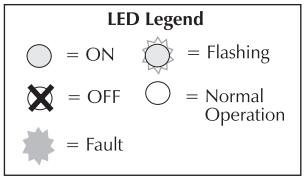
For installations where Auto-Negotiation is not possible from one end of the media conversion to the other, *McBasic 10/100* can be forced into either 10 Mbps or 100 Mbps mode. Link Fault Detection is not available and *McBasic 10/100* acts as a normal media converter.

While it is possible to have an Auto-Negotiating device on one side of a media conversion and a fixed (non-Autonegotiating) device on the other, link LEDs will react differently depending on where a problem occurs. Therefore, IMC Networks recommends you:

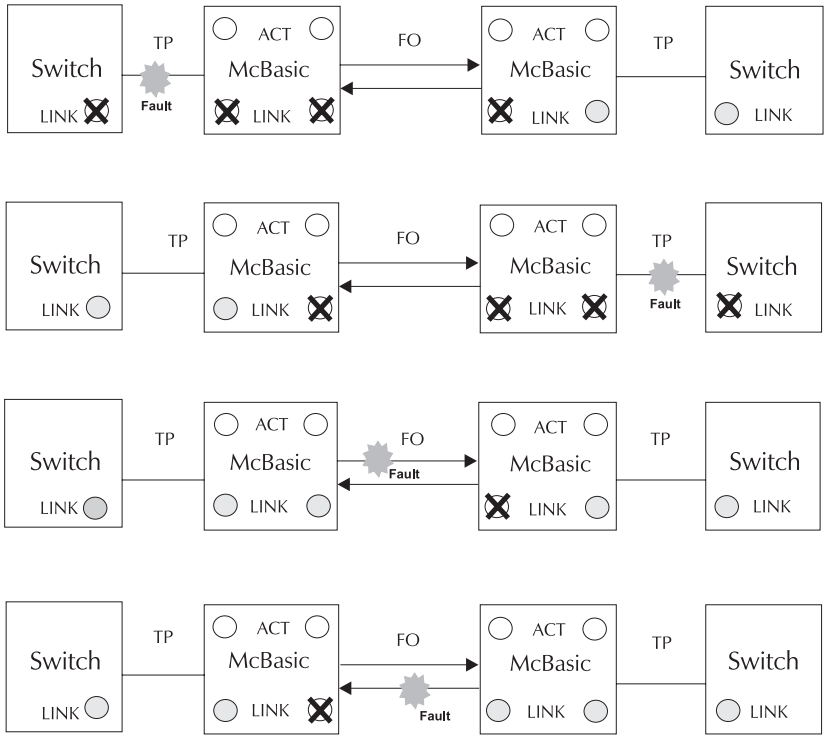
A) Set every device in the media conversion for Auto-Negotiation
or
B) Force 10 Mbps or 100 Mbps connections

Troubleshooting Examples

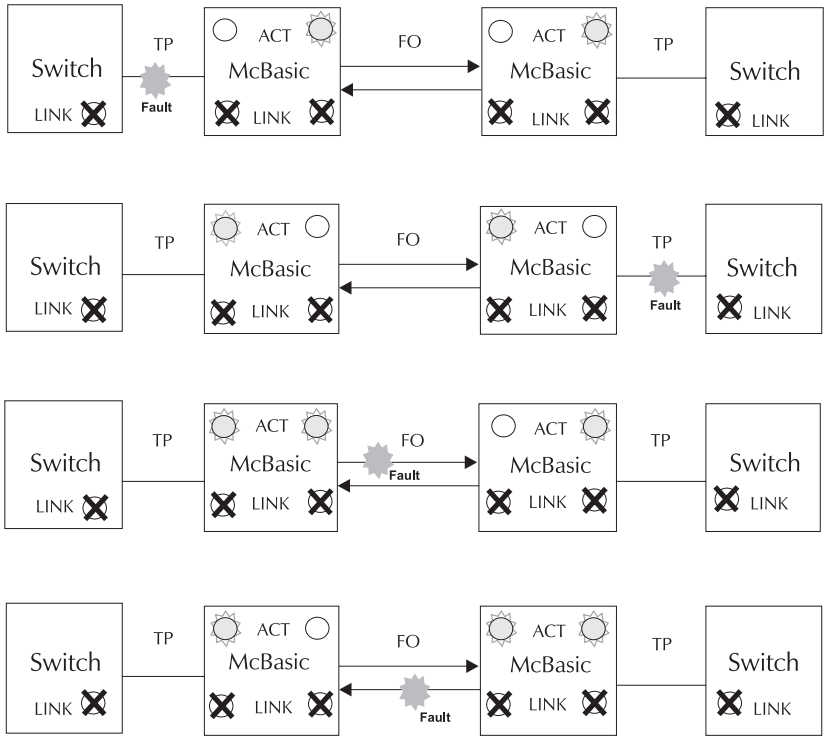
Following are a series of diagrams that show how the LEDs (Link and Activity only) will react when a fault occurs on various segments of a media conversion.



When both the *McBasic 10/100* units in a media conversion are set for either Forced 10 Mbps or Forced 100 Mbps mode, the following results occur:



When both the *McBasic 10/100* units in a media conversion are set for PNP/Transparent (Auto-Negotiation) mode, the following results occur:



Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1) Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low quality components can cause many hard-to-diagnose problems in an installation.
2) Dust caps are are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Assure that the fiber is properly terminated, polished and free of any dust or dirt and that the location is as free from dust and dirt as possible.
3) Store spare caps in a dust free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4) Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.

5) If you suspect that the optics have been contaminated, alternate between blasting with clean dry compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to your add-in modules. Always observe the following precautions when installing or handling an add-in module or any board assembly.

1) Do not remove unit from its protective packaging until you're ready to install it.
2) Wear an ESD wrist grounding strap before handling any module or component. If you do not have a wrist strap, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electro-static discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

3) Hold boards by the edges only; do not touch the electronic components or gold connectors.
4) After removal, always place the boards on a grounded, static free surface, ESD pad or in a proper ESD bag. Do not slide the board over any surface.

Technical Support

Tel: (949) 465-3000; (800) 624-1070 (in U.S.);
+32-16-550880 (Europe)
FAX: (949) 465-3020
E-Mail: techsupport@imcnetworks.com
Web: www.imcnetworks.com

Specifications

Environmental

Operating Temperature: 32° - 104° F (0° - 40° C)
Storage Temperature: 22° - 160° F (-6° - 71° C)
Humidity: 5 - 95% (non-condensing)

Power

AC Input Load: 100/240 ±10% VAC ~ 50/60 Hz, 0.1/0.05A

Fiber Optic Specifications

For fiber optic specifications, visit our Web site at
www.imcnetworks.com/fopower.htm.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. This warranty is subject to the limitations set forth below.

At its option, IMC Networks will repair or replace at no charge the product which proves to be defective within such warranty period. This limited warranty shall not apply if the IMC Networks product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than an authorized IMC Networks Service Technician or by any other causes unrelated to defective materials or

workmanship. Any replaced or repaired products or parts carry a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: 800-624-1070 (in the U.S.) or 949-465-3000 or FAX: 949-465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks.

IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

EXCEPT FOR THE EXPRESS WARRANTY SET FORTH ABOVE, IMC NETWORKS MAKES NO OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS IMC NETWORKS PRODUCT, INCLUDING WITHOUT LIMITATION ANY SOFTWARE ASSOCIATED OR INCLUDED. IMC NETWORKS SHALL DISREGARD AND NOT BE BOUND BY ANY REPRESENTATIONS OR WARRANTIES MADE BY ANY OTHER PERSON, INCLUDING EMPLOYEES, DISTRIBUTORS, RESELLERS OR DEALERS OF IMC NETWORKS, WHICH ARE INCONSISTENT WITH THE WARRANTY SET FORTH ABOVE. ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY LIMITED TO THE DURATION OF THE EXPRESS WARRANTY STATED ABOVE.

Every reasonable effort has been made to ensure that IMC Networks product manuals and promotional materials accurately describe IMC Networks product specifications and capabilities at the time of publication. However, because of ongoing improvements and updating of IMC Networks products, IMC Networks cannot guarantee the accuracy of printed materials after the date of publication and disclaims liability for changes, errors or omissions.

Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits.
This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

IMC Networks
19772 Pauling • Foothill Ranch, CA 92610-2611 USA
TEL: (949) 465-3000 • FAX: (949) 465-3020
www.imcnetworks.com

© 1999 IMC Networks. All rights reserved.

The information in this document is subject to change without notice. IMC Networks assumes no responsibility for any errors that may appear in this document. *McBasic and McBasic 10/100* are trademarks of IMC Networks. Specific brands and product names may be trademarks and are the property of their respective companies.

Document Number 55-80216-00 B0 November 1999